CHEMISTRY 243: *INORGANIC CHEMISTRY*
Spring 2015 course syllabus

I. STUDENT LEARNING GOALS

For Spring 2015, CHEM 234 *Inorganic Chemistry* will explore the chemistry of transition metal complexes, including simple coordination compounds, organometallic complexes, biological metal complexes, metal-based drugs, and coordination polymers and materials. This topic builds upon the foundation of coordination chemistry established in the CHEM 123 lab course (a prerequisite), while reviewing and building upon concepts of molecular structure, thermodynamics, molecular orbitals, electronic structure, kinetics and catalysis.

II. TOPICS (*tentative; details of reading assignments for each topic will be posted on Moodle*)

1. Metal-Ligand Complexes
2. Structures
3. Synthesis
4. Stability
5. Chelates and Macrocycles
6. Crystal Field Theory
7. Molecular Orbital Theory
8. Characterization
9. Redox Chemistry
10. Electronic Spectra
11. Excited States
12. Reaction Mechanisms
13. Kinetics of ligand substitution
14. Organometallics: structure and bonding
15. Organometallics: reactions
16. Catalysis
17. Bioinorganic Chemistry
18. Metals in Medicine
19. Solid-State Chemistry
20. special topics

III. INSTRUCTOR

Prof. Scott D. Cummings
Phone: PBX 5355 E-mail: cummingss@kenyon.edu
Office: Tomsich Hall 314
Office Hours: Tuesdays, Wednesdays, Thursdays 2−4 pm
My full schedule is available at: http://chemistry.kenyon.edu/cummings/schedule.htm

IV. CLASS MEETING TIMES

Tuesdays and Thursdays from 8:10−9:30 am in Hayes 203. *Please be on time.*

V. REQUIRED MATERIALS

Materials are available for purchase at the Kenyon College Bookstore and kenyon.bkstr.com.

1. *Inorganic Chemistry* by Duward Shriver, et al. W. H. Freeman, 6th edition (2014). ISBN-13: 978-1429299060.
   Note: Reading assignments and homework problem numbers will be based on the 6th edition. Students purchasing any other edition will need to reconcile any differences between texts.
2. scientific calculator — *bring it to every class.*

Important course materials (schedule, reading assignments, videos, Problem Sets, some ancillary class materials, and exam information) are available on our **course Moodle Site** at http://moodle.kenyon.edu (log in and select "CHEM 243 Inorganic Chemistry Spring 2015). Some materials will not be distributed in class.
Some class announcements may be made by **e-mail** to your Kenyon account.

VI. COURSE and COLLEGE POLICIES

A. PRE-REQUISITES

CHEM 121: *Introductory Chemistry I* (or CHEM 122) with CHEM 123: *Introductory Chemistry Lab I* is a prerequisite. This course is designed to complement the material in *Advanced Lab–Inorganic* (CHEM 372), and *Chemical Kinetics and Thermodynamics* (CHEM 335), but not all students in this course will have (yet) completed those courses. Your notes and textbooks from these courses may be helpful, though.

B. ATTENDANCE REQUIREMENTS

Class meetings are an important part of this course, and students are expected to attend all classes. Excessive absences will lead to a lower grade and may lead to expulsion from the course. I call your attention to the college policy on class attendance in the *Course of Study*:

> "Absences for reasons of illness are not ordinarily excused: only when a student is declared by the College physician to be infirm (in a hospital or at home) will a health report be sent from the Health and Counseling Center to the dean of students, giving the days when each patient is judged infirm and recommending that the student's class absences be excused."

ONLY the Dean of Students or Dean for Academic Advising (NOT the instructor) offers an Excused Absence. If you miss an in-class quiz or exam due to severe illness or emergency, your name must appear on the Dean's ***Excused Absence List*** in order to make up the work; otherwise a failing grade will be given. In the event of an absence from class, the student is responsible for securing any notes, handouts or announcements from the class.

Student-Athletes, I call your attention to the college attendance policies in the *Scheduling Guidelines for Athletic Contests* (http://documents.kenyon.edu/provost/cas_athlet_sched.doc). By the end of the first week of classes, you should notify the professor of all known athletic conflicts, which should not exceed 10% of our semester meeting times (3 classes).

C. CLASSROOM ETIQUETTE

Personal laptop computers are not allowed in the classroom. To maintain a respectful learning environment, please **turn off cell phones**. Because of the room arrangement and capacity, please **be on time to class** and **refrain from leaving the room** during class, if possible.

D. ACADEMIC STANDARDS and HONESTY

I call to your attention to the college policy on Maintenance of Academic Standards and Academic Integrity in the *Course of Study*. Any work you submit for a grade must be your own answers. Progress Reports are submitted for students performing below a grade level of C.

E. ACCESSIBILITY AND ACCOMMODATIONS

If you have a physical, psychological, medical or learning disability that may impact your ability to participate in class or carry out assigned course work, you should contact Erin Salva in the Office of Student Accessibility and Support Services (salvae@kenyon.edu; X5453). She will review your abilities and determine with you what accommodations are appropriate. ONLY the Coordinator of Student Accessibility Support Services approves accommodations for this course, but please feel free to discuss your concerns in private with me. All information and documentation of disability is confidential.

VII. ASSIGNMENTS and ASSESSMENT

A. STUDY GUIDES and READING ASSIGNMENTS

Each class meeting will be used to explore a new topic. Study Guides (posed to the Moodle site) will provide the **learning goals** and **reading assignments** for each topic. I strongly encourage you to review the reading assignment and Study Guide prior to each class. We will spend class time building upon the core concepts from the readings as we work on examples and problems. *Success in the course depends on your fidelity to this schedule of self-study*.

B. PROBLEM SETS and QUIZZES

Problem Sets will be due in class at 8:10 am on the announced due date. You are **encouraged to work with other students** on these assignments, but please recognize the difference between working with and copying from others. When Problem Sets ate collected, you must submit your own answers, which reflect your own understanding of each question. Your submission will be graded for overall effort and on your answers to a few select questions. Exam questions will draw directly from Problem Sets.

In-class quizzes on reading assignments, lecture notes and Problem Sets will be offered throughout the semester, on dates that may be announced or unannounced. As an alternative to collecting and grading Problem Sets, an in-class quiz based on the Problem Set may be offered, for which you can use your answer sheets. See attendance policy (above) regarding missed in-class quizzes.

Bring a calculator to every class.

C. EXAMINATIONS

Mid-term Exams (in class, 120 minutes) are scheduled for **February 5**, **February 26**, and **March 31**, and a Final Exam is scheduled by the Registrar for **Thursday, May 7 from 8:30−11:30 a.m. Please note these dates and times and do not plan travel on these days; no alternate exam times can be offered**. See attendance policy (above) regarding missed in-class exams. All exams and quizzes are cumulative in coverage.

An optional term project may be offered to replace one exam (200 point) grade. Details and due date will be explained later in the semester.

D. COURSE GRADES:

Total points earned determine the course letter grade:

PROBLEM SETS and QUIZZES:	200 points total
MID-TERM EXAMS (3):	600 points total
FINAL EXAM:	200 points

Letter grades for the course are: A (934–1000 points), A^- (900–933), B^+ (867–899), B (834–866), B^- (800–833), C^+ (767–799), C (734–766), C^- (700–733), D^-/D/D^+ (500–699 points), F (below 500 points).